

**WHAT IS CLAIMED IS:**

1. A cathode ray tube comprising:

a faceplate panel having a substantially flat exterior surface and a substantially concave interior surface; and

a phosphor screen formed on the interior surface of the faceplate panel, the phosphor screen having a horizontal axis, a vertical axis and a diagonal axis;

wherein a length from a central portion of the phosphor screen to a point where a vertical side line of the phosphor screen intersects the horizontal axis is less than a length from the central portion of the phosphor screen to a point where the vertical side line intersects the diagonal axis.

2. A cathode ray tube of claim 1 satisfying the following conditions:

$$0.5\% \leq (X_{pin}/H_d) \times 100 \leq 1.5\%$$

where  $X_{pin}$  is a gap from a point where the horizontal axis intersects the vertical side line of the phosphor screen to a point where the horizontal axis of the phosphor screen intersects a vertical line vertically connecting a point where the diagonal axis intersects the vertical side line of the phosphor screen to a point on the horizontal axis; and

$H_d$  is the length from the central portion of the phosphor screen to the point where the vertical side line of the phosphor screen intersects the horizontal axis.

3. A cathode ray tube of claim 3 wherein the concave interior surface has a curvature radius  $R_p$  satisfying the following condition:

$$1.2R \leq R_p \leq 8R$$

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where  $R = 1.767 \times$  a diagonal width of an effective screen of the cathode ray tube.

4. A cathode ray tube of claim 3 wherein the curvature radius  $R_p$  is identical to a diagonal curvature radius of the diagonal axis of the phosphor screen.

5. A cathode ray tube of claim 1 wherein a light transmissivity at a central portion of the panel is 85% or greater.

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6. A cathode ray tube of claim 1 wherein the ratio of light transmission at a peripheral portion on a diagonal corner of the effective screen of the cathode ray tube to light transmission at a central portion of the effective screen is 0.85 or greater.

7. A cathode ray tube of claim 6 wherein a light transmissivity at a central portion of the panel is 85% or greater.

8. A cathode ray tube of claim 1 wherein the faceplate panel satisfies the following condition:

$$y_1 - y_2 \leq 0$$

where  $y_1$  is a distance between the exterior surface and a visual image on a central axis of the faceplate panel and  $y_2$  is a distance between the exterior surface and a visual image on a periphery of the faceplate panel.

9. A cathode ray tube comprising:  
a faceplate panel having a substantially flat exterior surface and a substantially concave interior surface; and

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a phosphor screen formed on the interior surface of the faceplate panel, the phosphor screen having a horizontal axis, a vertical axis and a diagonal

axis;

wherein the faceplate panel comprises an effective screen corresponding to the phosphor screen; and

the effective screen comprises a horizontal axis, a vertical axis and a diagonal axis, wherein a length from a central portion of the effective screen to a point where a vertical side line of the effective screen intersects the horizontal axis is less than a length from the central portion of the effective screen to a point where the vertical side line intersects the diagonal axis.

10. A cathode ray tube of claim 9 satisfying the following conditions:

$$0.5\% \leq (X'_{pin}/H'd) \times 100 \leq 1.5\%$$

where  $X_{pin}$  is a gap from a point where the horizontal axis intersects the vertical side line of the effective screen to a point where the horizontal axis of the effective screen intersects a vertical line vertically connecting a point where the diagonal axis intersects the vertical side line of the effective screen to a point on the horizontal axis; and

$H_d$  is the length from the central portion of the effective screen to the point where the vertical side line of the effective screen intersects the horizontal axis.

11. A cathode ray tube of claim 9 wherein the concave interior surface has a curvature radius  $R_p$  satisfying the following condition:

$$1.2R \leq R_p \leq 8R$$

where  $R = 1.767 \times$  a diagonal width of an effective screen of the cathode ray tube.

12. A cathode ray tube of claim 11 wherein the curvature radius  $R_p$  is

identical to a diagonal curvature radius of the diagonal axis of the phosphor screen.

13. A cathode ray tube of claim 9 wherein a light transmissivity at a central portion of the panel is 85% or greater.

14. A cathode ray tube of claim 9 wherein the ratio of light transmission at a peripheral portion on a diagonal end of the phosphor screen to light transmission at a central portion of the panel is 0.85 or greater.

15. A cathode ray tube of claim 14 wherein a light transmissivity at a central portion of the panel is 85% or greater.

16. A cathode ray tube of claim 9 wherein the faceplate panel satisfies the following condition:

$$y_1 - y_2 \leq 0$$

where  $y_1$  is a distance between the exterior surface and a visual image on a central axis of the faceplate panel and  $y_2$  is a distance between the exterior surface and a visual image on a periphery of the faceplate panel.

17. A cathode ray tube of claim 9 wherein a diagonal end of an effective screen of the cathode ray tube satisfies the following condition:

$$B \leq t_1 \leq A$$

where B is a peripheral thickness of the faceplate panel on the diagonal end of the effective screen when a curvature radius  $R_p$  of the concave interior surface is  $8R$ , where  $R = 1.767 \times$  a diagonal width of the effective screen, and A is a peripheral thickness of the faceplate panel on the diagonal end of the effective screen when the ratio of light transmission at a peripheral portion of the faceplate panel on the diagonal end of the effective screen to light

transmission at a central portion of the effective screen is 0.85.

18. A cathode ray tube of claim 17 wherein the curvature radius  $R_p$  is identical to a diagonal curvature radius of the diagonal axis of the phosphor screen.

19. A cathode ray tube comprising:

a faceplate panel comprising a substantially flat exterior surface and a substantially concave interior surface;

a phosphor screen formed on the concave interior surface of the faceplate panel;

a funnel sealed to a rear end of the faceplate panel;

a shadow mask placed behind the faceplate panel, the shadow mask having an effective electron beam-passing area on which a plurality of apertures are formed;

an electron gun mounted in a neck portion of the funnel; and

a deflection yoke placed around an outer periphery of the funnel;

wherein the faceplate panel comprises an effective screen corresponding to the phosphor screen;

wherein the effective screen comprises a horizontal axis  $H'$ , a vertical axis  $V'$  and a diagonal axis  $D'$ , wherein a length from a central portion of the effective screen to a point where a vertical side line of the effective screen intersects the horizontal axis  $H'$  is less than a length from the central portion of the effective screen to a point where the vertical side line intersects the diagonal axis  $D'$ ; and

the effective beam-passing area of the shadow mask comprises a

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horizontal axis Hs, a vertical axis Vs and a diagonal axis Ds, wherein a length Hsd from a central portion of the effective beam-passing area to a point where the vertical side line of the effective beam-passing area intersects the horizontal axis Hs is less than a length from the central portion of the effective beam-passing area to a point where the vertical side line of the effective beam-passing area intersects the diagonal axis Ds.

20. A cathode ray tube of claim 19 wherein the concave interior surface has a curvature radius  $R_p$  satisfying the following condition:

$$1.2R \leq R_p \leq 8R$$

where  $R = 1.767 \times$  a diagonal width of the effective screen.

21. A cathode ray tube of claim 20 wherein the curvature radius  $R_p$  is identical to a diagonal curvature radius of the diagonal axis of the effective screen.

22. A cathode ray tube of claim 19 wherein the shadow mask is curved in at least one direction.

23. A cathode ray tube of claim 22 wherein the shadow mask has a curvature radius  $R_s$  satisfying the following condition:

$$1.2R \leq R_s \leq 4R$$

where  $R = 1.767 \times$  a diagonal width of the effective screen.

24. A cathode ray tube of claim 23 wherein the curvature radius  $R_s$  is identical to a diagonal curvature radius of the diagonal axis of the effective screen.

25. A cathode ray tube of claim 19 wherein a light transmissivity at a central portion of the panel is 85% or greater.

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26. A cathode ray tube of claim 19 wherein the ratio of light transmission at a peripheral portion on a diagonal end of the phosphor screen to light transmission at a central portion of the panel is 0.85 or greater.

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27. A cathode ray tube of claim 26 wherein a light transmissivity at a central portion of the panel is 85% or greater.

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28. A cathode ray tube of claim 9 wherein the faceplate panel satisfies the following condition:

$$y_1 - y_2 \leq 0$$

where  $y_1$  is a distance between the exterior surface and a visual image on a central axis of the faceplate panel and  $y_2$  is a distance between the exterior surface and a visual image on a periphery of the faceplate panel.

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29. A cathode ray tube of claim 22 wherein a curvature radius of the shadow mask is identical to or less than a curvature radius of the concave interior surface of the faceplate panel.

30. A cathode ray tube of claim 22 wherein a horizontal curvature radius of the shadow mask is identical to or less than a vertical curvature radius of the shadow mask.